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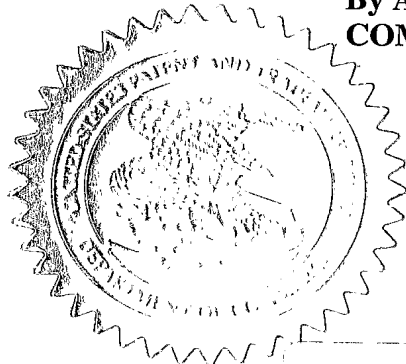
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

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INVENTOR(S)

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☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto
TITLE OF THE INVENTION (500 characters max)

NOVEL SYSTEM AND METHOD FOR PROVIDING RADIATION THERAPY

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ENCLOSED APPLICATION PARTS (check all that apply)

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Other (specify)



Application Data Sheet. See 37 CFR 1.76

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Applicant claims small entity status. See 37 CFR 1.27.



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United States Government.

No.



Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE



Date 02/24/2003

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USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

NOVEL SYSTEM AND METHOD FOR PROVIDING RADIATION THERAPY

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10 SUMMARY OF THE INVENTION

 The present invention relates to a novel system and method for providing
 radiation therapy for a patient. More specifically, the subject invention relates to a
 radiation therapy system which as been adapted to be provided in a mobile unit, the
15 adaptations to the mobile unit, and a method for providing radiation treatment to a patient
 in need of such a treatment.

BACKGROUND OF THE INVENTION

20 Radiation therapy has been in use for the treatment of cancer and other diseases
 for approximately 100 years. As early as 1897, it was concluded that x-rays could be used
 for therapeutic as well as diagnostic purposes, and in 1912, Marie Curie published the
 "Theory of Radioactivity." The investigation of x-ray radiation for patient therapy moved
 into the clinical routine in the early 1920s.

25 Since the first uses of radiation to treat cancer, important changes have been made
 in the field and numerous developments have been accomplished, including:

the generation of higher energy radiation beams for more effective cancer treatment;

5 the development of versatile linear accelerator and patient table designs to enable radiation to be delivered to the cancer from a variety of angles and directions;

the implementation of "multi-leaf" collimators (lead shutters) and other beam shaping devices for precision control and shaping of the radiation beam;

10 the use of CT, PET, MR and other image data sets to create three-dimensional planning models to accurately guide treatment; and

the implementation of networked computers to track radiation treatment sessions and patient dose calculations (both planned and accumulated).

15 The ultimate goal of all of the above changes, developments and improvements is the effective destruction of cancer tissue while delivering a minimal dose of radiation to adjacent healthy tissues. Another goal is to make the treatment easier and shorter for the patient to sustain and the physicians and other healthcare professionals to perform.

20 However, with all the advances in radiation treatment, there are urgent needs that have not been met. There are many patients in need of radiation therapy that are unable to travel to treatment centers. Mobile X-ray units have been in use for years and

provided physicians an important diagnostic tool for evaluating patients unable to travel to receive an x-ray. Radiation therapy is much more prohibitive due to the prolonged periods in which the radiation source is active. The need for a safe, effective mobile radiation therapy system has been needed and not met. The present system and method
5 fulfills the need for mobile radiation therapy.

SUMMARY OF THE INVENTION

A system for providing mobile radiation therapy to a patient in need of such therapy, said
10 system comprising:

- (a) A radiation therapy unit;
- (b) A suitable mobile radiation therapy vehicle; wherein said radiation therapy unit is suitably installed in said suitable mobile radiation therapy vehicle.

15 It is an object of the present invention to provide a system and method suitable to provide mobile radiation therapy to a patient.

It is another object of the present invention to provide for a vehicle suitably equipped to safely transport and house a mobile radiation therapy unit.

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It is another object of the present invention to modify a radiation therapy machine such that it is suitable to be transported in a mobile radiation therapy unit.

It is another object of the present invention to provide a method for providing radiation therapy in a mobile radiation therapy unit.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention relates to a system and method for providing a mobile radiation therapy unit. Radiation therapy is typically used to treat cancer. The term, "cancer" is meant to describe any physiological condition in which cells are not being regulated by normal mechanisms. Additional conditions for therapy may include, but would not be limited to: sarcomas, keloids, benign recalcitrant dermitidies, warts, calluses, psoriasis and the like. The present invention is intended and suitable for treatment of any medical condition in which radiation therapy would be medically prescribed and beneficial. The units conventionally utilized in radiation therapy are typically housed in hospitals or radiation therapy centers. The present invention provides for a radiation therapy unit that has been adapted for transport and treatment in a mobile therapy unit.

The source of the radiation therapy unit may be any unit such that a therapeutic amount of radiation is delivered to a patient in a safe and medically acceptable manner. Those skilled in the art are well versed in the time parameters for therapy as well as the conventionally utilized dosages of radiation. Radiation therapy units may be used to deliver up to 35mV of radiation. For superficial treatments, levels up to 250kV may be

used. The present invention is envisioned to provide a system for providing treatment in any therapeutic range of radiation therapy.

In one embodiment, a vehicle is lined with lead sufficient to prevent exposure to radiation outside the treatment area. The lead may be 1/32 to 1/8 inch in thickness. In a preferred embodiment, the lead lining is 1/16 inch thick. The lining is installed within the mobile transport unit in a manner as is conventionally known in order to prevent any radiation from escaping the treatment area within the vehicle. The interior of the vehicle is also suitably equipped with a lead lined area for the operator of the therapy machine to safely administer the radiation therapy. The operation area is further constructed with a conventionally used radiation-inhibiting window for the operator to observe the patient during therapy.

A radiation therapy machine is installed within the vehicle. The installation should be in a suitable manner such that the machine does not move during therapy and is not subject to any forces that would effect calibration or accuracy of the radiation treatment. In one embodiment the radiation therapy unit is secured to the mobile unit. The radiation therapy machine is secured to an upper support plate on the interior of the lead lined mobile unit. Below the floor of the mobile unit is a second lower support plate. The second support plate is secured to a structural support of the vehicle. In one embodiment, the support plate is fastened to a structural beam attached to the frame of the vehicle. The unit is attached to the upper support plate, which in turn is fastened through floor of the mobile unit, to the lower support plate, which is attached to a structural support beam on the frame of the vehicle. The installation of a radiation

therapy unit in this manner provides a secure unit that will use the suspension of the mobile vehicle as a source of stabilization of the radiation therapy unit.

The mobile unit is further provided with a securing mechanism such that the sensitive treatment arm of the radiation therapy unit may be immobilized during transport. The immobilization is important to preserve the integrity of the calibration and provide precise delivery of radiation from the radiation therapy unit when the vehicle is stopped and treatment is provided to a patient.

Also provided for is a method for providing radiation therapy in a mobile radiation therapy unit. Said method comprises the steps of:

- 10 (a) preparing a mobile therapy vehicle such that the interior is suitable for providing radiation therapy;
- (b) securing a radiation therapy unit in a suitable manner to the interior of said vehicle;
- (c) providing suitable access for patients and medical personnel to the interior of the vehicle;
- 15 (d) bringing a patient inside said mobile therapy vehicle;
- (e) providing suitable radiation therapy, inside said vehicle, for a patient in need of such therapy

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While certain preferred and alternative embodiments of the invention have been set forth for purposes of disclosing the invention, modifications to the disclosed embodiments may occur to those who are skilled in the art. Accordingly, the appended claims are intended to cover all embodiments of the invention and modifications thereof that do not depart

5 from the spirit and scope of the invention.

I Claim:

1. A system for providing mobile radiation therapy to a patient in need of such therapy, said system comprising:
 - 5 (c) A radiation therapy unit;
 - (d) A suitable mobile radiation therapy vehicle; wherein said radiation therapy unit is suitably installed in said suitable mobile radiation therapy vehicle.
2. A method for providing radiation therapy in a mobile radiation therapy unit. Said method comprises the steps of:
 - 10 (a) preparing a mobile therapy vehicle such that the interior is suitable for providing radiation therapy;
 - (b) securing a radiation therapy unit in a suitable manner to the interior of said vehicle;
 - (c) providing suitable access for patients and medical personnel to the interior
 - 15 of the vehicle;
 - (d) bringing a patient inside said mobile therapy vehicle;
 - (e) providing suitable radiation therapy, inside said vehicle, for a patient in need of such therapy

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ABSTRACT

A system and method for providing mobile radiation therapy is herein disclosed and described.